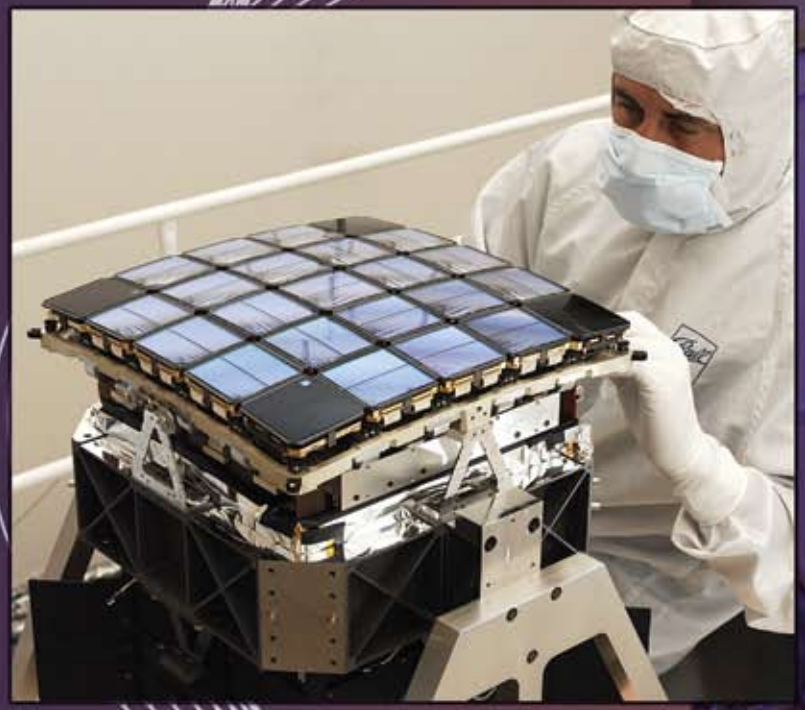
KEPLER



Ball Aerospace
& Technologies Corp.

Kepler

Kepler is part of NASA's Discovery Program, and it is the first mission specifically designed to search for Earth-like planets orbiting stars beyond our solar system. The Kepler telescope is named after the 17th-century pioneering astronomer Johannes Kepler.

When a planet passes in front of its parent star, the star's brightness slightly decreases due to this transit. The sensitive Kepler photometer will detect changes in brightness caused by planets transiting stars with a diameter 100 times larger than the planets. Kepler is expected to detect planets transiting their stars several times, making it possible to determine their orbital periods.

The NASA Ames Research Center is home to Kepler's science principal investigator, and is also responsible for the ground system development, mission operations and science data analysis. Kepler mission development is managed by the Jet Propulsion Laboratory. Ball Aerospace & Technologies Corp. is responsible for developing the Kepler flight system and supporting mission operations.

Kepler is a pathfinder mission that will help catalog stars for further observation by the James Webb Space Telescope, scheduled to launch in 2013. Ball Aerospace is the principal subcontractor for the Webb telescope, contributing advanced optical technology and the lightweight mirror system.

Ball Aerospace's Role

Ball Aerospace designed and built Kepler's photometer and spacecraft, employing successes from its previous NASA missions including the Hubble and Spitzer Space Telescopes, and the Deep Impact mission.

Quick Facts

- **Spacecraft Dimensions:** 2.7 meters (9 feet) diameter, and 4.7 meters (15.3 feet) high.
- **Weight**: 1,052.4 kilograms (2,320.1 pounds) at launch, consisting of a 562.7-kilogram (1240.5-pound) spacecraft, a 478-kilogram (1,043.9-pound) photometer, and 11.7 kilograms (25.8 pounds) of hydrazine propellant.
- **Power:** Four non-coplanar panels with a total area of 10.2 square meters (109.8 square feet) of solar-collecting surface area. Combined, the 2,860 individual solar cells can produce over 1,100 watts of electrical current. Power storage is provided by a 20 amp-hour rechargeable lithium-ion battery.
- **Photometer**: The sole Kepler instrument is a photometer, which has a wide field of view, 0.95-meter (37-inch) aperture, Schmidt type telescope with a 1.4-meter (55-inch) primary mirror. Kepler's photometer has a field of view 33,000 times greater than that of the Hubble Space Telescope. The photometer features a focal plane array of 42 charged-coupled devices at the center with more than 95 million pixels. The focal plane array will measure the brightness of 100,000 stars every 30 minutes and is the largest camera NASA has ever flown in space.
- **Mission**: Launched March 6, 2009, 10:49 pm, EST from Cape Canaveral Air Force Station, Fla., aboard a United Launch Alliance Delta II with an Earth-trailing heliocentric orbit of 371 days and a mission duration of 3.5 years.

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